

A BIBLIOGRAPHY OF MULTIPLE NIGHTLY  
OBSERVATIONS OF COMET TAILS

by

Stephen Plagemann

Churchill College

Cambridge, England .

## A BIBLIOGRAPHY OF MULTIPLE NIGHTLY OBSERVATIONS OF COMET TAILS

The first phase of a long term study of the physics of comet tails and their relationship to the interplanetary medium was a search of the astronomical literature over the past 70 years. The bibliography given here by no means includes every observation of comet tails, but concentrates on those studies which include more than one photograph per night. This bibliography hopefully will provide the observational basis of a study of the short term behavior of comet tails.

The resources of the library at the U. S. Naval Observatory in Washington, D. C. were utilized in this study. Founded in 1847 under President Tyler's administration, this institution probably has the best collection of obscure observatory bulletins and astronomical journals in the United States. The procedure followed was to find references from articles already at hand and from references given in the back issues of the *Astronomescher Jahresbericht*. Since most exposures of comet are made for only a few minutes in order to determine the position of the comet's nucleus, many promising references had to be rejected. The references listed are by the name of the comet in chronological order. In addition to the usual information, a short statement beneath each reference was designed to give an idea of the number of plates available over a certain time period. Also included is the name of the observatory where the plates are located.

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## COMET

### Burnham 1959k (1960 II)

- 1) Malaise, D., "Photographic Observations of the Tail Activity of Comet Burnham 1959k," *Astronomical Journal*, 68, p. 561-565, 1963.  
3-5 plates per night April 21-May 1, 1959 - Observatory de Haute-Provence
- 2) Wurm, Karl and Maffei, Paolo, "Über einige Schweraufnahmen des Kometen Burnham 1959k und des Kometen Morehouse 1908 III," *Zeitschrift für Astrophysik*, 52, p. 294-299, 1961.  
Series of plates April-May 1959 at Asiago Observatory.

## COMET

### Mrkos 1957d

- 1) Lüst, Reha, "Die Bewegung und Form von Strukturen im Schweif des Kometen Mrkos 1957d," *Zeit für Astroph.*, 54, p. 67-97, 1962.  
3-5 plates per night August 19-28, 1957 from 48-inch Schmidt and Mt. Palomar.
- 2) Kearns, Charles, "Comet Mrkos, 1957d," *Pub. Ast. Soc. Pacific*, 70, p. 202-203, 1957.  
28 plates taken Mt. Palomar 48-inch Schmidt August 17-28, 1957.
- 3) McClure, Alan and Liller, William, "Rayed Structure in the Tail of Comet Mrkos, 1957d," *Pub. Ast. Soc. Pacific*, 70, p. 404-406, 1957.  
Photos taken August 10-15 - also done by C. A. Wirtanen, Lick Obs., and by H. L. Giclas, Lowell, Obs.
- 4) \_\_\_\_\_, "Comet Mrkos 1957d," *Russian Astronomical Circular*, No. 184, 185, 191, 1957-1958.  
2-5 plates per night taken various observatories in USSR August 1957
- 5) Dufay, Maurice, "Photographics del la Comete Mrkos (1957d)," *Bull. Soc. Astron. de France*, 72, p. 259-263, 1957.  
6-10 plates per night August 17-24, 1957 at Obs. de Haute-Provence.

- 6) Maffei, Paolo, "Osservazioni Fotografiche Della Cometa Mrkos (1957d)," Padua, Osser. Astrof. di Assiago, 3, p. No. 12, p. 23-32, 1961.

6-8 plates per night August 14-31, 1957. Taken at Asiago Observatory.

#### COMET

##### Arend-Roland (1956h)

- 1) Larsson-Leander, Gunnar, "Physical Observations of Comet Arend-Roland (1956h)," Arkiv for Astronomi, 2(23), p. 259-271, 1958.  
2-20 plates each night April 25-May 6, 1957 at Stockholm Obs.
- 2) Nazarchuk, G. K., "Accelerations in the Tail of the Comet 1956h," Astronom. Zhurnal, 36 (4), p. 719-722, 1959 (also Soviet Astron. (AJ), 3, p. 698, 1959).  
4 plates each night April 27-30, May 2 at Crimean Astrophys. Obs.
- 3) ———, Komet Arend-Roland (1956h), Astronomical Circular (USSR), No. 180, 181, 182, 1956-1957.  
5 plates per night April 24-28, May 1-31 (various nights at several observatories in USSR).
- 4) Richter, N., "Das physikalische Bild des Kometen Arend-Roland (1956h)," Die Sterne, 34, p. 213-227, 1957.  
A detailed study by spectra, photometer on comet done at Sonneberg Obs.
- 5) Maffei, Paolo, "Observazioni fotografiche della cometa Arend-Roland (1956h)," Control dell'Observat. Astrofisico dell'Universita' di Padova in Asiago, 3, No. 120, p. 5-22, 1961.  
3-5 plates per night May 5-July 26, 1957 - obtained from Astron. station at Loiano (Assiago Obs.)
- 6) Wenske, K., "Beobachtungen der Achswisentwicklung des Kometen 1956h (Arend-Roland)," Astron. Nach, 284, p. 171-175, 1958.  
1-4 observations from November, 1956 to June, 1957 at Hamburg Observ., along with isophotes.

#### COMET

##### Whipple-Fedtke 1942g

- 1) Hoffmeister, C., "Physikalische Untersuchungen an Kometen. I, Die Beziehungen des primären Schweifstrahls zum Radius vektor," Zeitschrift für Astrophysik, 22, 265, 1943.  
2-5 plates per night March 4-30, 1943 plus data on other major comets, most plates taken at Sonneberg Obs.
- 2) Ahnert, P., "Der Komet 1942g (Whipple-Fedtke)," Zeit. für Astrophysik, 22, 286, 1943.  
1-3 plates from December 14, 1942 to March 26, 1943 at Sonneberg Obs.
- 3) Hoffmeister, C., "Physikalische Untersuchungen an Kometen II. Die Bewegungen der Schwerfmetalle und die Repulsivkraft der Sonne beim Kometen 1942g," Zeit. für Astrophysik, 23, p. 1-18, 1943.  
7-16 plates taken each night March 8-14, 1942 at Sonneberg Obs.
- 4) Burton, H. E., and G. M. Raynsford, U. S. Lyons and J. L. Smith, "Observations of Comets," Astron. J., 50, p. 185-189, 1942.  
4 plates taken Naval Observatory June 4, 1943.
- 5) Junkes, J. and A. Zirwes, "Photographische Beobachtungen des Kometen Whipple-Fedtke (1942g)," Vatican Ricerche Astronomiche, 1, No. 7, p. 211-220, 1943.  
Single plate per night January 4-April 4, 1943, 19 in all at Vatican Obs. Castel Gondolfo, Italy. Most striking photos of tail motion reproduced in article.

#### COMET

Fisler 1937f

- 1) Stobbe, J., "Photographische Beobachtungen des Kometen 1937f (Finsler) und des Encheschen Kometen 1937h," Astronomische Nachrichten, No. 6357, 265, p. 322-329, 1938.  
1-4 plates July 29-August 12, 1937, Kiel Obs.

#### COMET

Borrelly (1911e)

- 1) Knox-Shaw, H., "Observations of Comets," Bulletin of Khedivial Observatory, Helwan, Egypt, 1(5), p. 29-31, 1911.

2 plates per night September 24, 28; October 25, November 1,  
1911 at Khedivial Obs., Egypt.

## COMET

### 1911V Brooks

- 1) Kiess, C. C., "Photographic Observations of Comet c 1911 (Brooks)," Lick Observatory Bulletin, No. 239, p. 183-185, 1913.  
1-2 plates per night at Lick Obs., Mt. Hamilton from September 13-November 3, 1911 (30 min. to 1 hour exposure).
- 2) Knox-Shaw H., "Observations of Brook's Comet (1911c)," Bulletin of Khedivial Observatory, Helwan, 1(5), p. 32-35, 1912.  
21 photos 2-4 per night obtained between October 22 and November 4, 3 on November 18-19 at Khedivial Obs.
- 3) Barnard, E. E., "Photographic Observations of Comet 1911c (Brooks)," Astrop. Jour., 36, p. 1-13, 1912.  
Series of single plates taken August 18-October 28, 1911 at Yerkes Obs.
- 4) Mammano, A., and K. Wurm, "Investigations Concerning the Tail Axis of Comets," Icarus, 4, p. 1-7, 1965.  
A detailed study of tail axis angles of Brooks 1911c, Morehouse 1908c, and Daniel 1907d Use of Duncan's (Lick) plates for Daniel 1907d.

## COMET

### Halley 1910II

- 1) Slipher, V. M., Lampland, C. O., "Preliminary Notes on Photographic and Spectrographic Observations of Halley's Comet," Lowell Observatory Bulletin, No. 47, p. 252-254, 1910.  
2 or more plates per night April 14-May 1, Lowell Observ.
- 2) Lowell, Percival, "Motion of Molecules in the Tail of Halley's Comet," Lowell Observatory Bulletin, No. 48, p. 256-258, 1910.  
200 plates available April 18-June 6 taken at Lowell Observ.

- 3) Barnard, E. E., "Observations of Halley's Comet and Notes on Its Photographic Appearance," *Astronomical Journal*, No. 609, p. 76-77, 1910.  
Observations (no detail on number) selected dates between December 28-February 1, 1910 at Yerkes Observatory.
- 4) Rambaut, A. A., "Photographic and Visual Observations of Halley's Comet (1909c), Daniel's Comet (1909e) and Comet 1910a, made at Radcliffe Observatory, Oxford," *Monthly Notices Royal Astronomical Society*, 71, p. 133-141, 1910.  
1-2 plates May 23, 25, 31, June 2, 1910 at Oxford Observatory.
- 5) Astronomer Royal, "Observations made at the Royal Observatory, Greenwich, in 1909-1910," *Monthly Notices Royal Astronomical Society*, 71, p. 475-478, 1911.  
About 1-3 plates per night September 9, 1909 to June 1, 1910 at Greenwich Obs.
- 6) Gondolatsch, F., "Eine Methode zur raumlichen Bahnbestimmung bewegter Kometenschweifmaterie (mit Anwendung auf den Halleyschen Kometen)," *Astron. Nach.*, 237, p. 1-10, 1928.  
3 plates per night from 5-7 June 1910 at Astron. Inst. Berlin - Dahlen.
- 7) Quenisset, F. and Baldet, F., "Marche et positions de la comete de Halley," *Bulletin Astronomical Society of France*, 24, p. 191-192, 1909.  
Plates taken April and May at Obs. de Juvisy, France.
- 8) Sotome, Kiyofusa and Michinao Hoasi, "Halley's Comet as Observed in Darien, Manchuria, during the months April-June 1910," *Annals of Tokyo Observatory*, 5, 1-22, 1911.  
A series of 3 photos per night, which 8 x 10" copies are available on file. Taken at Tokyo Observatory.
- 9) Wood, H. E., "Observations of Halley's Comet, 1910," *Transvaal Observatory Circular*, 1, No. 4, p. 23-30, 1910.  
An undetermined number of plates taken continuously at Transvaal Obs., April 11-May 14, 1910.
- 10) Opik, Erust J., "The Motion of the Condensation in the Tail of Halley's Comet June 5-8, 1910," *Zeitschrift für Astrophysik*, 58, p. 192-201, 1964.

- 11) Bobrovnikoff, N. T., "Halley's Comet in its Apparition of 1909-1911, Lick Observ. Pub., Vol. 17, pt. 2, p. 1-170, 1930.

Some 438 photos, with as many as 10 plates per night, plates at Lick Obs.

## COMET

### 1910a

- 1) Merrill, Paul W. and Olivier, Charles P., "Photographs of Comet a1910, Obtained with the Crocker Telescope," Lick Observatory Bulletin, No. 174, p. 182, 1910.

4 plates per night from January 26-February 1, 1910.

- 2) Lampland, C. O., "Comet a1910," Lowell Observatory Bulletin. No. 57, p. 34-55, 1912.

4-9 plates each night January 26-February 3, 1910 (Lowell Obs.)

- 3) Rambaut, A. A., "Photographic and Visual Observations of Halley's Comet (1909c), Daniel's Comet (1909e), and Comet 1910a, made at the Radcliffe Observatory, Oxford," Monthly Notices Royal Astronomical Society, 71, p. 133-141, 1910.

2 plates per night January 22, 25, 26, 29, 1910 at Radcliffe Observ.

- 4) \_\_\_\_\_, "La Grande Comete 1910a," Bulletin Societe Astronomique de France, 24, p. 234-238, 1910.

Photos taken in January 1910 by various observatories in Europe.

## COMET

### Morehouse 1908 III

- 1) Glancy, A. Estelle, "Photographic Observations of Comet c1908 (Morehouse)," Lick Observatory Bulletin, No. 161, p. 122-132, 1909.

2-3 plates per night from September 19-December 11, 1908 at Lick Observatory.

- 2) Bobrovnikoff, N. T., "Motion of Matter in the Tail of Comet 1908 III (Morehouse)," Lick Observatory Bulletin, 13, No. 398, p. 161-172, 1928.



- a) A large number of plates of this comet were taken by  
E. E. Banard of Yerkes Observatory (25 plates done October  
14-17 at Lick Obs.
- b) 2-15 plates done October 14-17 at Lick Obs.
- 3) Lowell, Percival, "Comet Morehouse," Lowell Observatory  
Bulletin No. 48, p. 257-58, 1910.  
60 negatives taken by E. C. Slipher - Many pairs.
- 4) Cherrington, Ernest, "The Motion of Matter in the Tail of the  
Comet Morehouse," Astronomical Journal, No. 1002, 18, p. 73-80,  
1934.  
26 plates, 3-4 per evening September 29-November 1, 1908,  
Perkins Observatory.
- 5) Wurm, K. and Mammano, A., "The Axis of Type I Tails of Comets,"  
Icarus, 3, p. 1-7, 1964.  
9 plates on October 3-4, 1908 from 36" telescope at Greenwich  
Obs. - 156 originals in all. Angles of tail axis and ray are  
measured.
- 6) Eddington, A. S., "The Envelopes of Comet Morehouse (1908c),"  
Monthly Notices Royal Astronomical Society, 70, p. 442-465, 1910.  
Theory developed using 10 plates on nights 27, 30 October 1908  
Greenwich Obs.
- 7) Astronomer Royal, "Photographs of Comet c1908, taken at the  
Royal Observatory, Greenwich," Mon. Not. Roy. Ast. Soc., 59,  
p. 47-52, 1908.  
6-9 plates taken September 29-October 5; 5-October 15; 8-  
October 21, 24, 27, 30; 5-6 plates November 3-10 - a great  
collection.
- 8) Barnard, E. E., "Comet c1908 (Morehouse)," Astrop. Journal, 28,  
p. 292-299, 1908.  
A more coherent study of plates taken between September 2-  
October 24. 6 plates October 1, 2, 3, 15, 2-3 on other nights.
- 9) Barnard, E. E., "Photographic Observations of Comet c1908  
(Morehouse)," Ap. J., 28, p. 384-388, 1908.  
Detailed description plates made in October-November 1908.

- 10) Barnard, E. E., "Photographic Observations of Comet c1908 (Morehouse) Third Paper," *Ap. J.*, 29, p. 65-71, 1908.  
2-3 plates from November 13-December 13.
- 11) Stumpff, P., "Die Bewegung der Materie in Schweiff des Kometen Morehouse am 29. Oktober 1908," *Zeit. für Astrophysik*, 47, p. 225-265, 1959.  
Theoretical study movement in tail.
- 12) Kopff, A., "Über die Bewegung seitlicher Schweifpartien beim Kometen 1908c (Morehouse)," *Astro. Nach.*, 182, p. 51-60, 1909.  
6 plates October 3, 1908 and Theory of tail movement (Koningsberg Obs.).
- 13) Herayama, S. and M. Toda, "Photographs of Comet c1908 (Morehouse)," *Annales de l'Observatoire Astronomique de Tokyo*, 3, No. 6, p. 1-12, 1910.  
A series of plates from October 2-December 15, a sequence has been photographically reproduced for our use (Tokyo Observatory).
- 14) Wurm, Karl and Paolo Maffei, "Über einige Schweifaufnahmen des Kometen Burnham 1959k and des Kometen Morehouse 1908 III," *Zeitschrift für Astrophysik* 52, p. 294-299, 1961.  
A short theoretical study of nine plates taken at Asiago Obs. April-May 1959.

## COMET

### 1907 IV (Daniel)

- 1) Duncan, J. C., "Photographic Observations of Comet d 1907 (Daniel)," *Lick Observatory Bulletin*, No. 126, p. 171-180, 1907.  
1-3 plates per night July 10-September 9, 1907 at Lick Observ.
- 2) Astronomer Royal, "Observations of Comet d1907, from photographs taken with the 30-in. Reflector of the Thompson Equatorial and the Astrographic, 13-in. Refractor at the Royal Observatory, Greenwich," *Monthly Not. Roy. Ast. Soc.*, 68, p. 126, 1907.  
1-2 plates taken July 4-August 18, 1907 at Greenwich Obs.
- 3) Wolf, Max, "Photographs of Comet d 1907 (Daniel)," *Monthly Notices of Roy. Ast. Soc.*, 68, p. 180, 1907.  
3-7 plates per night July 22-August 27, 1907 at Heidelberg Obs.

- 4) Quenisset, F., "La comete Daniel," Bull. Societe Astronomique de France, 21, p. 369-370, 385-388, 1907.  
2 plates per night July 12-August 15 - 10 nights in all (1907 at Juvisy Obs.).
- 5) Barnard, E. E., "Photographic Observations of Daniels' Comet," Proceedings of the American Philosophical Society, 49, p. 3-16, 1910.  
Single plate per night and description and comparison with plates from elsewhere - Yerkes Obs. July 3-September 12, 1907.
- 6) Mammano, A. and K. Wurm, "Investigations Concerning the Tail Axis of Comets," Icarus, 4, p. 1-7, 1965.  
40 plates taken on 18 nights from Duncan's Lick Obs. publication, and many plates on comet Morehouse 1908c, Brooks 1911c.
- 7) Kopff, A., "Untersuchungen uber den Schweif des Kometen 1907d (Daniel)," Publications Astrophys. Institute Konigstuhl-Heidelberg, 3, p. 125-147, 1900.  
2 plates per night taken August 4, 7, 9, 11, 14, 1907 at Heidelberg Observatory.

## COMET

### 1903c Borrelly

- 1) Barnard, E. E., "Photographic Observations of Borrelly's Comet and Exploration of the Phenomena of the Tail on July 24, 1903," Astrop. J., 18, p. 210-217, 1903.  
3 plates taken on July 24 at Yerkes and Nauterre Obs. also lists series of single plates taken July 18-30.
- 2) Albrecht, Sebastian, "Photographic Observations of Comet 1903c (Borrelly)," Astrop. J., 18, p. 121-128, 1904.  
36 negatives taken at Lick Observ., Mt. Hamilton between June 22-August 18, 1903, including 1 on July 24 to add to Dr. Barnard's collection of 3.
- 3) Astronomer Royal, "Note on Photographs of Comet c1903 (Borrelly), taken with the 30-inch Reflector at the Royal Observatory, Greenwich," Monthly Notices, Royal Astron. Soc., 64, p. 83-84, 1903.  
1-2 plates per night from July 20, 24, 26, 30, August 1, 2 (at Greenwich Obs.).

- 4) Jaegermann, R., "The Motion of the Matter Composing the Tail of Comet 1903 IV, Observed July 24, 1903", *Astrop. J.*, 21, p. 323-336, 1905.

Theoretical analysis of tail motion over July 23-25 of 12 plates taken by different observers.

#### COMET

##### 1899 I Swift

- 1) Barnard, E. E., "Observations of Comet," *Astronomical Journal* No. 965, XLI, p. 146, 1931.  
4 plates nights of May 21, 22, 29-30, 1899 - Yerkes 40" also 3 of comet 1900 II.

#### COMET

##### Brooks 1893 IV

- 1) Barnard, E. E., "The Photographs of Comets," *Publications of Lick Observatory*, vol. XI, p. 10-46, 1913.  
A series of remarkable photos of Brooks comet, from October 18-November 19, 1893.
- 2) Barnard, E. E., "On the Anomalous Tails of Comets," *Astrop. J.*, 22, p. 249-255, 1905.  
An early theoretical study on relationship of solar activity and the unusual activity in the tail of comet Brooks 1893 IV and several other comets.

#### COMET

##### Swift 1892 I

- 1) Jaegermann, R., "Die Bewegung der Schweifmalerie des Kometen 1892 I auf einen zur Sonne Konvexen Bogen," *Astron. Nach.*, 171, p. 1-10, 1892.  
1 plate per night April 5-8, 10, 1892.
- 2) Barnard, E. E., "The Photographs of Comets," *Publications of Lick Observatory*, vol. XI, p. 10-46, 1913.  
1 plate per night April 4-7, 18, 22, 24, 26, May 22, 23, 30, 1892 and some remarkable plates of Brooks Comet, 1893 which are

reproduced in 8 x 10" positives. Also photos of Swift 1892 I, Holmes 1893 III and Gale 1894 II. Taken at Lick Observatory, Mt. Hamilton, California.

- 3) Pickering, Wm. H., "Visual Observations of the Moon and Planets," *Annals of the Harvard College Observatory*, 32, part 2, p. 267-295, 1900.  
A great number of plates taken, sometimes 3 per night from March 30-May 8, 1892. The earliest work on relationship between sun and tail activity.
- 4) Kopff, A., "Über den Schweif des Kometen 1892 I (Swift)," *Pub. Astrop. Inst. Konigstuhl-Heidelberg*, 3, p. 41-76, 1909.  
A series of 6 plates in all, May 22-June 1, 1892 at Heidelberg Obs.

#### MISCELLANEOUS COMETS

- 1) Maffei, Paolo, "Observazioni fotografiche delle comete 1948g, 1955e, 1955f, 1955g, 1958g, 1958a," *Contrib. Obser. Astrof. dell' Universita' di Padova in Asiago*, 3, No. 124, p. 1-14, 1961.  
4 plates June 7 of 1948g (Honda-Bernasoni); 4-5 plates, June 24, 25, 1955 of 1955e (Mrkos).
- 2) Osterbrock, Donald E., "A Study of Two Comet Tails," *Astrop. J.*, 129, p. 95-105, 1958.  
Observations at greater than 3 A.U. of comet Baade (1954h), July 31, 1954, 1955, 1956; Also comet Haro-Chavira (1954k) in 1955-1956.
- 3) Belton, Michael J. S., "Some Characteristics of Type II Comet Tails and the Problems of Distant Comets," to be published in *Astronomical Journal*, 1965 - preprint from Kitt Peak Nat. Obs., Tucson, Arizona.  
Studies of comet 1941d (van Gent), 19506 (Minkowski) and 1956h (Arend-Roland).